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David R. Lauck

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## Three New Species of *Belostoma* from Mexico and Central America (Hemiptera: Belostomatidae), with a List of North American Species

DAVID R. LAUCK

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The following three new species are based on series of specimens assembled for the preparation of a monograph of the genus *Belostoma*. The contributing museums and the abbreviations of their names used in this paper are as follows : American Museum of Natural History (AMNH) , University of British Columbia (BC) , Cornell University (CU) , University of Florida (FU) , Illinois Natural History Survey (INHS) , Iowa State University (ISU) , University of Kansas (KU) , my private collection at the Chicago Academy of Sciences (L) , Los Angeles County Museum (LACM) , private collection of Arnold Menke (MC) , Stockholm Museum (MS) , University of Michigan (MU) , and U. S. National Museum (USNM) .

In addition to the new species, two species groups are established.

### *Belostoma* minor group

Medium sized, elongate to ovate species ranging from 15.5 to 21.5 mm. long. Anteoculus distinctly less than interoculus ; interoculus approximately equal to the width of an eye ; clypeus extending beyond a transverse line between the anterior apices of the eyes; 1st segment of beak slightly shorter than the 2nd. Prosternal keel semicircular. Abdominal connexival band of hairs covering about half the inner portion of the connexivum, extending only slightly beyond the penultimate segment. Aedeagus as shown in figures 1, 2, 4, and 5.

In addition to the two new species below, this group contains *Belostoma minor* (Palisot de Beauvois) of the Greater Antilles and *B. testaceum* (Leidy), found in the United States.

### *Belostoma thomasi* new species

*Size and shape.* Body elongate-ovate. Length : .<sub>6</sub>, 16.520.0 mm. ; 9<sup>y</sup>, 18.5-20.5 mm. Width : 6 6, 7.7-9.1 mm. ; 9, 8.7-10.0 mm. Width of head, 3.9-4.6 mm. ; width of pronotum, 5.9-7.7 mm. ; length of pronotum, 2.8-3.6 mm.

*Color and markings.* Mottled : elaborately yellow and brown, giving a speckled effect ; some dark specimens without mottling. Thoracic venter usually darker brown. Hemelytra grayish-yellow, mottled with brown. Coxae spotted with yellow ; femora and tibiae each with three, usually distinct, dark bands. Abdominal venter usually brown to dark gray, streaked with yellow ; margin of each connexival segment with a single transverse dark stripe. Many specimens with a median yellow longitudinal stripe extending from the anterior margin of the pronotum to the apices of the clavi.

*Structural characteristics.* Interocular space nearly twice the width of an eye ; eyes slightly flattened along the lateral margins ; mesal margins divergent ; foveae of head prominent, forming deep depressions at the cephalomesal margins of the eyes. Apex of scutellum touching a line extending through the nodal furrows. Aedeagus as shown in figures 2 and 5.

*Comparative notes.* *B. thomasi* n. sp. is easily distinguished from other members of this group by the depressions of the vertex. It also differs from *B. confusum* n. sp. by the transverse markings of the connexival margins and the wider inter-ocular space.

*Nomenclature.* *B. thomasi* n. sp. has been recognized by several authors under the name *Belostoma fusciventre*. *B. fusciventre* first appears in the literature as a species of Stål (Dufour, 1863). If Stål described this species, I have been unable to find the original description. Dufour remarked that his description was based on a specimen labelled by Stål. Dufour may have had either *B. thomasi* or *B. confusum* n. spp. The specimen used by Dufour for the description is not in the Vienna Museum with the rest of the collection of Signoret.

*Types.* Holotype ( ), allotype ( <sup>y</sup> ), and 32 ♂♂ and 35 ♀♀ paratypes labelled : " Cuernavaca, Morelos, Mexico, 10-6-38,

temporary pool, H. D. Thomas." The holotype measures : length, 18.5 mm. ; width, 9.5 mm. Allotype : length, 19.0 mm. ; width, 9.0 mm. The allotype and several of the paratypes have median yellow longitudinal stripes. This series is from the Francis Huntington Snow Entomological Collections, University of Kansas. An additional 13 e e and 14 2  $\gamma$  paratypes from Cojutepeque, Cuscatlán, El Salvador, are in my collection (Chicago Academy of Sciences) . These specimens were collected July 7, 1957 by Wilson Wheatcroft and myself.

*Etymology.* *B. thomasi* is named in honor of the collector, H. D. Thomas, who has collected specimens of aquatic Hemiptera extensively in Mexico.

*Distribution.* *B. thomasi* n. sp., as *B. confusum* n. sp., ranges in southwestern United States and Mexico, but also extends southward into the Central American countries. Specimens from the following localities have been identified :

UNITED STATES. TEXAS : *Brook* Co., e, 3 (KU) ; *Cameron* Co., Brownsville, e (KU) ; y (INHS) ; (USNM) ; *Colorado* Co., y (KU) ; *Duval* Co., San Diego, d' (CU) ; *Hidalgo* Co., Edinburgh, d (MU) ; Progresso, d (KU) ; *Matagorda* Co., Matagorda, e (USNM) ; *Sutton* Co., y (KU) ; *Tarrant* Co., Ft. Worth, (USNM) ; *Uvalde* Co., Dabinal, y (KU) ; *Victoria* Co., Victoria, 2 (USNM)

MEXICO. BAJA CALIFORNIA : Mexicali, y (AMNH). CAMPECHE: Ciudad del Carmen, 5 e e, 12  $\gamma$  (KU) ; Palizada, (KU) .

CHIAPAS : Comitán, y (KU) ; Hidalgo La Libertad, (KU) ; Lake Tepancuapan, e (KU) ; Tuxtla Gutierrez, e, y (KU). COLIMA : Colima, e,  $\gamma$  (USNM). DISTRITO FEDERAL : Mexico City, 2 (KU) . GUERRERO : South of Mexico City, y (KU) ; Acapulco,  $\gamma$  (KU) ; Cajones-Rincón, e (KU) ;

Iguala, 4 e d, 6 (KU) ; Rio Balsas, (KU) . HIDALGO : El Chico, e (KU) . JALISCO : Aultán, y (KU) ; Tecolotlán, (KU) ; Union de Tula, 2 e d (KU) . MICHOACAN : Carapán,

(L) ; El Sabino Urupan, e, 2 (KU) . MORELOS : Cuernavaca, 11 d d, 16 (KU) also type series ; Puente de Ixtla,

4 e e, 10 9 (KU) . NAYARIT : Ixtlán del Rio, d (MC) .

NUEVO LEON : Montemorelos, d (AMNH) . OAXACA : La Ventera, (ISU) ; Oaxaca, 2 (KU) ; Posita, 10 e e, 30 9 (KU) ; Salina Cruz, y (AMNH) ; Tepanatepec, e (ISU) ; Zanatepec, 2 (ISU) .

SONORA : Obregon, (ISU) . TAMAULIPAS

LIPAS : Hacienda La Clemetina, (KU). VERA CRUZ : Vera  
 Cruz, y (ISU) ; Playon sur Plantanas Minatitlán, (AMNH).  
 YUCATAN : Chichen Itza, 2 (KU) ; 2 6 6, (MU) ;  
 Merida, 6 (KU) ; 9 (MU) ; Yunca, (MU).  
 GUATEMALA. JUTIAPA : Jutiapa, e, 9 (L).  
 EL SALVADOR. CUSCATLAN : type series ; LA UNION : San Antonio,  
 e, (L) ; Santa Rosa, 2 e (L).  
 NICARAGUA. e, (USNM) . RIVAS : Belén, (L) ;  
 Pena Blanca, 2 6 (L).  
 COSTA RICA. GUANACASTE : La Cruz, y (L). SAN JOSÉ: San Jose, 6 d,  
 8 9 9 (L).  
 HONDURAS. GUAIMAS DISTRICT : Tela, y (MU) . MORAZÁN :  
 Tegucigalpa, 4 cf or, 2 y (L).

***Belostoma confusum* new species**

*Size and shape.* Body elongate-ovoid. Length : 6 6, 16.5-20.0 mm.; , 16.0-21.5 mm.  
 Width : 7.6-8.8 mm. ;  
 , 7.6-10.0 mm. Width of head, 3.8-4.4 mm. ; width of pronotum, 5.8-7.5 mm. ; length of  
 pronotum, 2.7-3.5 mm.

*Color and markings.* Dull brown to light cream. Thoracic venter light brown to yellow ; hemelytra grayish-brown to cream. Legs indistinctly and irregularly banded, except for three regular bands on the protibia. Abdominal venter dark grayish-brown to light yellow, connexival margins without transverse bands. Many specimens with a median yellow longitudinal stripe extending from the anterior margin of the pronotum to apices of clavi.

*Structural characteristics.* Interocular space about 1.4 times the width of an eye ; eyes slightly flattened along the lateral margins, mesal margins nearly parallel ; foveae of vertex not prominent. Apex of scutellum touching a line extending through the nodal furrows. Aedeagus as shown in figures 1 and 4.

*Comparative notes.* *B. confusum* n. sp. differs from other members of this group by the aedeagus, the parallel mesal margins of the eyes, and the shallow foveae of the vertex. It is generally slightly smaller in size than *B. thomasi* n. sp.

*Nomenclature.* Mayr (1871) considered *B. confusum* n. sp. synonymous with *B. minor* (Dufour). Kirkaldy and Bueno

(1909) renamed *B. minor* (Dufour), calling it *Belostoma apache*, believing it to be different from *B. minor* (Palisot de Beauvois). However, *B. minor* (Dufour) is a Brasilian species, not Mexican. The identity of *B. minor* (Dufour) is unknown to me and can not be established without the specimen used as the basis of the original description. This species is not in the Vienna Museum with the rest of the collection of Signoret.

*Types.* Holotype (e), allotype (, and 61 e d and 49 y y paratypes labelled : "Tlalpan, D.F., Mex., 11-3-36, H. D. Thomas." The type series is from the Francis Huntington Snow Entomological Collections, University of Kansas. The holotype measures : length, 18.4 mm. ; width, 8.4 mm. Allotype : length, 17.9 mm. ; width, 8.1 mm.

*Etymology.* *B. confusum* n. sp. is derived from the confusion concerning the name of this species.

*Distribution.* The range of this species is apparently limited to the southwestern United States and Mexico. Specimens from the following localities have been identified :

UNITED STATES. CALIFORNIA : Inyo Co., Little Lake, (BC). TEXAS : Cameron Co., Brownsville, (KU) ; Colorado Co., 2 6, (KU) ; Kleberg Co., Kingsville, 2 o e (KU). MEXICO. 2 (MS) ; 3 6, (KU) ; o (USNM). DISTRITO FEDERAL : 2 (USNM) ; Canales de Xochimilco, 2 y y (KU) ; e (USNM) ; Guadalupe, 6 6 e, 10 y o (AMNH) ; Lake Texcoco, 8 6, 14 (KU) ; Mexico City, 7 (KU) ; Tlalpan, 10 Y (KU) ; also type series. CHIHUAHUA : (MC). CHIAPAS: Hidalgo La Libertad, y (KU). JALISCO: Guadalajara, 2 (L) ; Union de Tula, e (KU). MICHOACAN: Carapa, e (KU) ; Coumatlán, y (L) ; Ouroga, y (L) ; Pátzcuaro, (KU) ; Tuxpan, e, 2 y y (KU) ; Zacapu, e, 3 9 9 (KU) ; Zamora, y (L) ; Zitácuaro, e, 2 y y (L). NUEVO LEON : La Gloria, 2 6 (L). OAXACA : Oaxaca, 6 e e, 5 9 (KU) ; Posita, 5 d' , 7 Yi (KU) ; Tlacolula, y (L). PUEBLA : Puebla, y (KU). QUERETARO: Santa Rosa, d' (L). QUERETARO-GUANAJUATO: , y (L). YUCATAN: Chichen Itzá, Xtolok Cenote, e (KU).

#### *Belostoma oxyurum* group

Medium to moderately small species, ranging from 10.0-19.8 mm. long.

Anterior interocular space about one and a half times the width of an eye ; anteoculus about two-thirds the interoculus ; clypeus usually extending beyond a line drawn between the anterior apices of the eyes ; eyes globular, nearly semicircular ; 1st segment of the beak distinctly shorter than the 2nd. Scutellum not reaching a transverse line drawn between the nodal furrows. Prosternal keel bluntly rounded to somewhat pointed. Hairs of the connexivum covering about half the inner portion, extending slightly beyond the penultimate segment. Aedeagus with broad, flat, plate-like ventral diverticulum (fig. 3).

In addition to the following new species this group contains three South American species : *Belostoma oxyurum* (Dufour) , *B. horvathi* Montandon, and *B. sanctulum* Montandon.

#### *Belostoma aztecum* new species

*Size and shape.* Ovate. Length : 7 e, 10.0-13.8 mm. ; , 11.9-13.9 mm. Width : 6 e, 5.3-6.9 mm. ; y y , 5.9-7.2 mm. Width of head, 2.7-3.4 mm. ; width of pronotum, 3.9-5.3 mm. ; length of pronotum, 1.8-2.4 mm.

*Color and markings.* Nearly uniformly brown to dark grayish- or reddish-brown. Femora and tibiae each with three dark bands, often indistinct and irregular, but always distinct on protibiae ; meso- and metatarsi light brown, tipped with a dark band. Connexival margin with a single, often faint, transverse stripe and often a second dark spot on each segmental margin.

*Structural characteristics.* Interocular space 1.6-1.8 times the width of an eye. Prosternal keel prominent, usually pointed. Aedeagus with ovate ventral diverticulum (figs. 3 and 6) .

*Comparative notes.* *B. aztecum* n. sp. is the only member of this group found in North America. It is easily distinguished from other members of this group by the small size and the genital characters. The only other *Belostoma* in North America this size is *B. minusculum* (Uhler) , which is more southern in distribution and has a completely different type of aedeagus, which places it in another group.

*Nomenclature.* Many authors have erroneously referred to

this species as *B. micantulum*, but *B. micantulum* Stål is strictly South American and belongs in another group.

*Types.* Holotype ( ), allotype ( 9 ), and 23 6 d' and 22 9 2 paratypes from Sirama, La Union, El Salvador, will be placed in the Francis Huntington Snow Entomological Collections, University of Kansas. The holotype measures : length, 13.8 mm. ; width, 6.7 mm. Allotype : length, 13.8 mm. ; width, 6.4 mm. In addition to the above are the following paratypes from La Union, El Salvador : Sirama, 2 e 6 (L) ; Santa Rosa, 3 a 6, 3 9 9 (L) ; Santa Rosa, d, 2 9 9 (L) . All of the above types were collected July 23-24, 1957, by Wilson Wheatcroft and myself.

*Etymology.* *B. aztecum* n. sp. is named after the Aztec Indians.

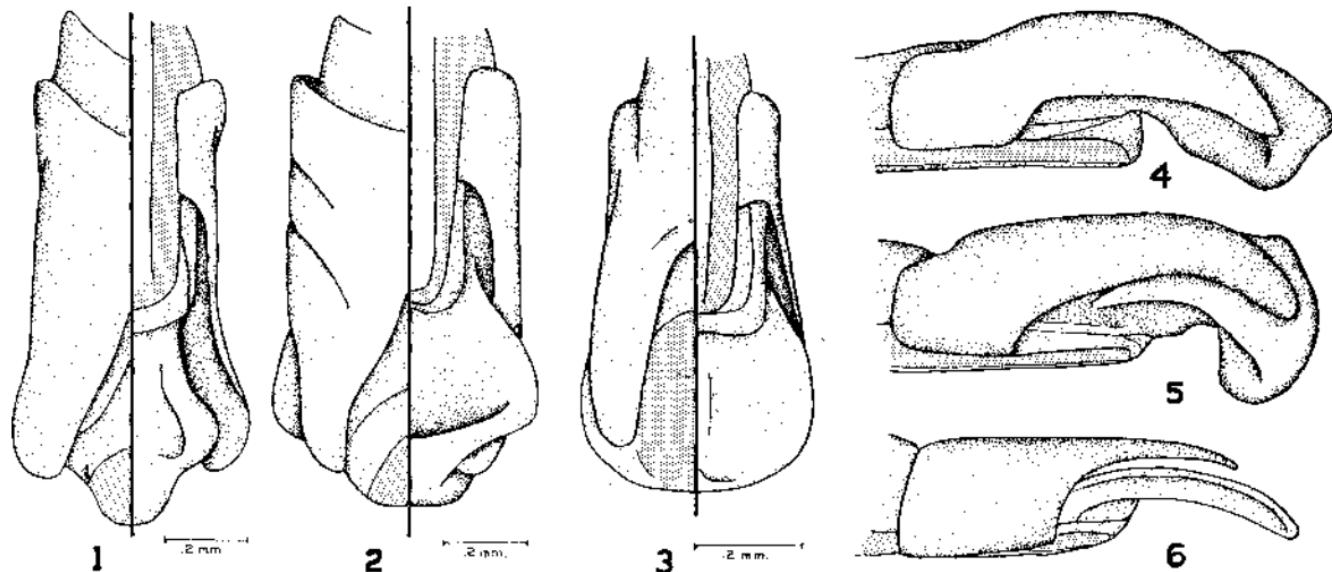
*Distribution.* *B. aztecum* n. sp. occurs as far north as Sinaloa, Mexico, but seems to be more common in the southern part of Mexico and extends to El Salvador. In the more southern countries of Central America, *B. aztecum* n. sp. seems to be replaced by *B. minusculum* (Uhler) . Specimens from the following localities have been identified :

MEXICO : CAMPECHE : Hidalgo Encarnación, 4 d d, 3 9 9 (KU) . CHIAPAS : Lake Tepancuapán, 5 e 6. 3 9 9 (KU) . COLIMA : Manzanillo, 6, 3 9 (LACM) . GUERRERO : Acapulco, cs (KU) ; 11 d d, 14 9 9 (L) . MICHOACAN : Coumatlán, 2 e d', 8 9 9 (L) ; Ouroga, 6, 9 (L) . SINALOA Pericos, 9 (L) . VERA CRUZ : Acatlán, 2 d d (CU) ; Minatitlán, 9 (AMNH) ; Tampico, 5 d 6, 6 9 9 (FU) ; Tuxtla, d (L) ; Vera Cruz, 10

d, 10 9 9 (KU) ; 14 6 d, 5 9 9 (L) .

EL SALVADOR. LA UNION : type series. SANTA ANA : Candelaria, 3 d d, 9 (L) .

*Acknowledgements.* I am greatly indebted to the curators of the above mentioned museums for the loan of specimens and especially to Dr. M. Beier, Vienna Museum of Natural History, for his assistance in searching for the types of the species of *Belostoma* described by Dufour (1863) , which were in the collections of Signoret. I wish to thank Professors L. E. Chadwick and W. V. Balduf, University of Illinois, for their helpful suggestions.



Figures 1 to 6

1. *Belostoma con fusum* n. sp., 2. *Belostoma thomasi* n. sp., 3. *Belostoma aztecum* n. sp., 4. *Belostoma con fusum* n. sp., 5. *Belostoma thomasi* n. sp., 6. *Belostoma aztecum* n. sp.

Figures 1 through 3 are divided into left and right halves. The left half of the drawing represents the dorsal aspect of the left side of the aedeagus. The right half of the drawing shows the ventral aspect of the left side of the aedeagus. The right side of the aedeagus may be considered homothetic to its corresponding dorsal and ventral halves. Figures 4 through 6 represent the lateral aspect of the aedeagus.

List of North American Species of *Belostoma*

1. <i>aztecum</i> n. sp.	Mexico, El Salvador
2. <i>bakeri</i> Montandon	Western U. S., northern Mexico
3. <i>confusum</i> n. sp.	Southwestern U. S., Mexico
4. <i>ellipticum</i> Latreille	Cuba, Bahamas, Texas, east coast of Mexico and Central America.
5. <i>flumineum</i> Say	U. S., Canada, northern Mexico
6. <i>lutarium</i> (Stål)	Eastern and south-central U. S.
7. <i>minor</i> (Palisot de Beauvois)	Greater Antilles
8. <i>saratogae</i> Menke	California
9. <i>subspinosum subspinosum</i> (Palisot de Beauvois)	Antilles (exclusive of Cuba)
<i>subspinosum cupreomicans</i> (Stål)	Southwestern U. S., Mexico, Central America
10. <i>testaceum</i> (Leidy)	Eastern and gulf states of U. S.
11. <i>thomasi</i> n. sp.	Southwestern U. S., Mexico, Central America

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